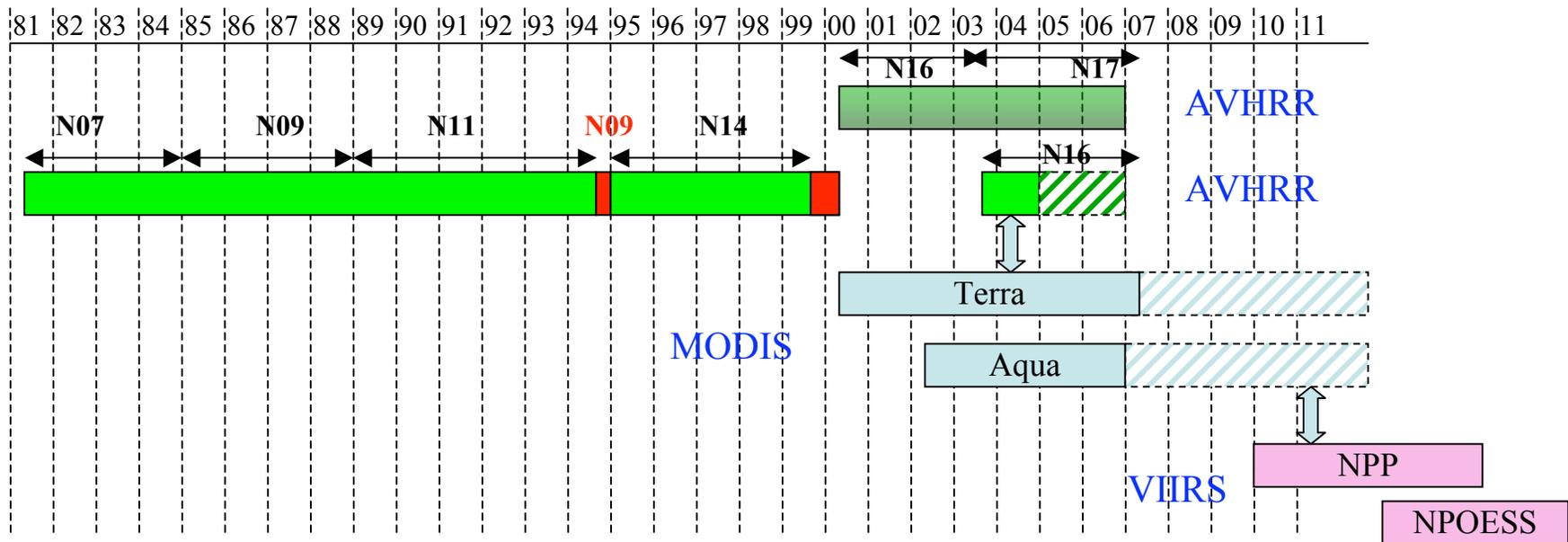


A 0.05 degree global climate/interdisciplinary long term data set from AVHRR, MODIS and VIIRS

- *NASA* : Ed Masuoka (MODAPS), Namzi Saleous, **Jeff Pedelty (Processing)**, **Sadashiva Devadiga (Quality Assessment)**, Jim Tucker & Jorge Pinzon (Assessment)
- *UMD*: **Eric Vermote (Science)**, Steve Prince (Outreach), Chris Justice
- *NOAA*: Jeff Privette (Land Surface Temperature)
- *South Dakota State University*: David Roy (Burned Area)
- *Boston University*: Crystal Schaaf (BRDF/Albedo)

Data Sources



LTDR Web Page

The image shows two browser windows. The left window displays the main LTDR website, which includes a navigation menu with links such as 'Project Overview and Science Background', 'Documents and Presentations', 'AVHRR Vicarious Calibration', 'Data Products', 'Participants', 'Feedback', and 'Updates/ Changes History'. The right window shows the 'AVHRR Calibration' page, which contains a paragraph explaining the calibration process and two scatter plots. The top plot shows 'Degradation in channel 1 (from ocean observations)' from 1980 to 2005, with data points for NOAA-7, NOAA-9, NOAA-11, NOAA-14, and NOAA-16. The bottom plot shows 'Channel 1/Channel 2 ratio (from Coastal observations)' over the same period, with data points for NOAA-7, NOAA-9, NOAA-11, NOAA-14, and NOAA-16.

LTDR
Land Long Term Data Record

LTDR is a NASA-funded REASoN project to produce a global coastal AVHRR, MODIS and VIIRS for Land studies. The project will create reflectance and NDVI at a resolution of 0.05 degrees. Higher order LAI/FPAR, albedo will be created at a coarser temporal resolution. AVHRR data onboard NOAA satellites from 1981 - present.

[Project Overview and Science Background](#)
[Documents and Presentations](#)
[AVHRR Vicarious Calibration](#)
[Data Products](#)
[Participants](#)
[Feedback](#)
[Updates/ Changes History](#)

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AVHRR Calibration
Land Long Term Data Record

Consistent and accurate calibration is a pre-requisite to creating a long-term data record. The AVHRR instrument suffers from the lack of onboard calibration for its visible to short wave infrared channels. Various vicarious calibration approaches were employed by users to account for the sensor degradation. For the LTDR REASoN project, we adopted the approach developed by Vermote and Kaufman (1995) that relies on clear ocean and accurate Rayleigh scattering computations to derive the sensor degradation in the red bands. This approach uses high clouds to predict the variation in the NIR to Red ratio and transfer the calibration to the NIR channel. This approach does not require any in situ or aircraft measurements and is applied consistently across the AVHRR instruments onboard various NOAA satellites. Click on the satellite link to get the calibration coefficients for the corresponding AVHRR ([NOAA-7](#), [NOAA-9](#), [NOAA-11](#), [NOAA-14](#), [NOAA-16](#)).

Degradation in channel 1 (from Ocean observations)

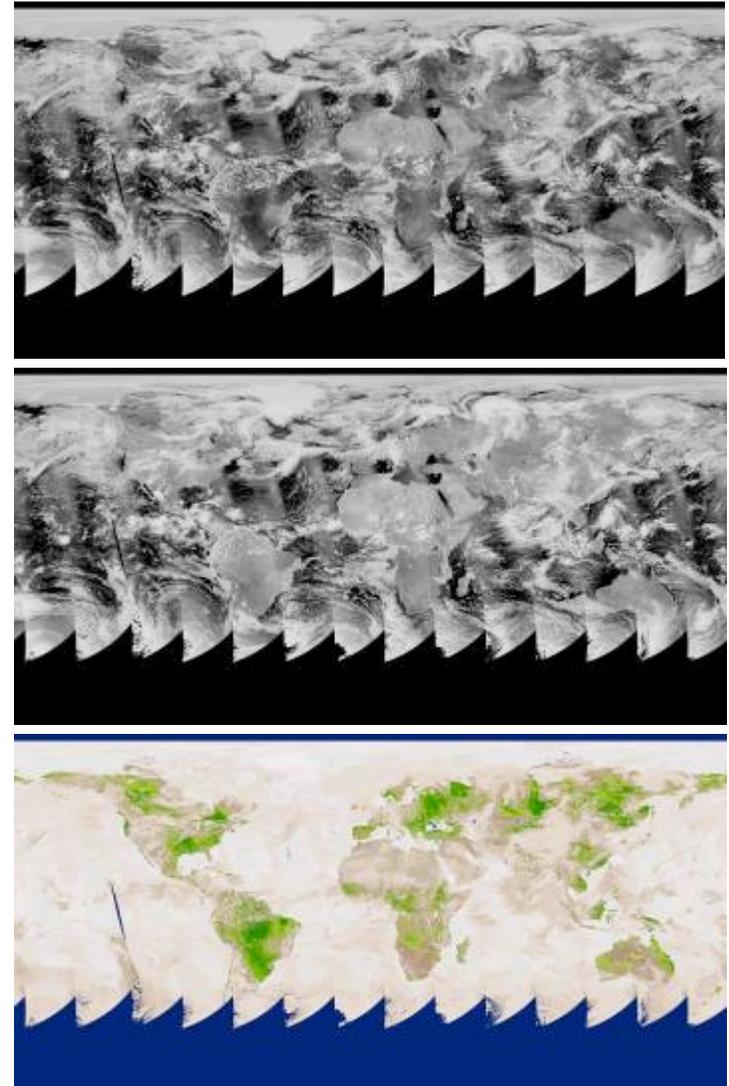
Channel 1/Channel 2 ratio (from Coastal observations)

http://ltdr.nascom.nasa.gov/tldr/noaa-09_calibration.html

<http://ltdr.nascom.nasa.gov/ltdr/ltdr.html>

Beta Data Set

- Algorithms:
 - Vicarious calibration (Vermote/Kaufman)
 - Cloud screening: CLAVR
 - Partial Atmospheric Correction:
 - Rayleigh (NCEP)
 - Ozone (TOMS)
 - Water Vapor (NCEP)
- Products:
 - Daily NDVI (AVH13C1)
 - Daily surface reflectance (AVH09C1)
- Format:
 - Linear Lat/Lon projection
 - Spatial resolution: 0.05 Deg
 - HDF-EOS
- Time Period:
 - 1981 – 2000 completed
- Archive and Distribution:
 - Over 1 TB stored online.
 - Distributed by ftp and web



NOAA-11 - 1992193 (7/11/1992) : Ch1,
Ch2 and NDVI

2006 activities

- Produce an AVHRR surface reflectance and NDVI beta data set using Pathfinder 2 algorithms (vicarious calibration; Rayleigh, ozone and water vapor correction).
- Setup a web/ftp interface for data distribution.
- Identify a set of validation sites for use in the evaluation of the products.
- Evaluation of produced data set and start operational QA activity (global browse, known issues, time series monitoring and trends).
 - problems with geolocation, cloud screening, water vapor correction in Beta data set

2007

- Produce improved AVHRR surface reflectance and NDVI data set (vicarious calibration; Rayleigh, ozone and water vapor correction) 1981-1999, 2003 [Feb-Mar]
- Produce aerosol-corrected data set [June]
 - *Use coincident MODIS and AVHRR data to improve aerosol retrieval and correction in AVHRR*
- Release aerosol-corrected Surf Reflectance [July]
- *Produce BRDF/Albedo [July]*
- Produce Land Surface Temperature [August]
- Release Land Surface Temperature [December]
- Produce Burned Area [December]